

Name \_\_\_\_\_

### ***5.3 FACTORING POLYNOMIALS COMPLETELY***

Factor completely

1. $40a^2 + 16ab + 25a + 10b$	2. $35a^2 + 20ab - 63a - 36b$
3. $125a^3 + 25a^2 - 9b^2 + 27b^3$	4. $27a^3 + 9a^2 - 16b^2 - 64b^3$
5. $49a^2 + 56a + 16 - 42a - 24$	6. $9a^2 - 48ab + 64b^2 - 15a + 40b$
7. $16a^2 + 8a + 1 - 9b^2$	8. $49a^2 - 56a + 16 - 81b^2$
9. $36a^2b^2 - 100b^2$	10. $12a^3 - 39a^2 - 36a$

**Factoring Polynomials Completely**

Factor by grouping.

1.  $c^2 - cx + cd - dx$  \_\_\_\_\_

2.  $cd + 4c + 3d + 12$  \_\_\_\_\_

3.  $xy + 7x - 4y - 28$  \_\_\_\_\_

4.  $x^2 - y^2 + nx + ny$  \_\_\_\_\_

Factor completely.

5.  $5y^2 - 20$  \_\_\_\_\_

6.  $3a^2 + 15a + 18$  \_\_\_\_\_

7.  $-a^3 - 216$  \_\_\_\_\_

8.  $6a^3 + 32a^2 + 10a$  \_\_\_\_\_

9.  $x^4 - 16$  \_\_\_\_\_

10.  $y^4 - 13y^2 + 36$  \_\_\_\_\_

11.  $2d^6 - 54d^3$  \_\_\_\_\_

12.  $x^4 - 8x^2 + 16$  \_\_\_\_\_

**Applications**

13. **Geometry** The area of a lot is  $2x^2 - 4x - 30 \text{ m}^2$ . Express the area in completely factored form.

\_\_\_\_\_

14. **Geometry** The volume of a box is  $x^3 - x^2 - 6x \text{ cm}^3$ . Express the volume in completely factored form.

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**MIXED PRACTICE**

Factor completely.

15.  $z^2 + 17z + 42$  \_\_\_\_\_

16.  $27n^3 - 1$  \_\_\_\_\_

17.  $3c^3 - 36c^2 + 60c$  \_\_\_\_\_

18.  $100r^2 - 81z^2$  \_\_\_\_\_

19.  $25d^2 - 20d + 4$  \_\_\_\_\_